

# Concept for Setting up a Working Group in the NFDI Section “Common Infrastructures”

## **Name of the working group**

Data management planning

## **Acronym**

infra-dmp

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# Abstract

Nowadays, it is fairly common that scientific communities are working together in large collaborations at distributed locations, but only few of them have their data collections subject to rigorous data management. Nevertheless, researchers face the upcoming requirements of the funding agencies regarding data management. Here, data management planning (DMP) is an opportunity to accompany the generation and processing of data, as well as to generate data management plans, reports, etc. As has been shown in many cases, it is of particular importance for communication and early RDM awareness creation in projects, institutes, etc. Previous surveys have shown that some of the NFDI consortia see the importance of DMP tools to manage information efficiently and have adapted the RDMO software for this purpose. A survey showed that many consortia do not use RDMO yet, but have great interest in the tool. Since several institutions in Germany already use RDMO, it can be recommended by the NFDI as an efficient tool for the planning process of data management.

It also became clear that the topic of DMP must not only be considered on a technical level, but also on a content level, i.e. including templates and (disciplinary) guidelines. . The working group promotes the corresponding coordination processes between the consortia (content and technical aspects), conducts needs analyses in the area of DMPs and develops both content and technical development paths and a sustainable operating model.

## Motivation and Objectives

Data management plans are internationally identified and established as a crucial element of custom-fit project planning and data management workflows. They could also be a tool or instrument for the establishment of services to measure research data quality regarding the application of the FAIR data principles. This working group has identified the needs to address both the technical perspectives and the content of data management plans. Past experience has shown that aligning both perspectives is of high importance to provide a good service to researchers. All changing aspects in terms of content have an impact on the technical design of the DMP tool. Therefore, the objectives of the working group are the following:

- Targeted coordination, alignment and exchange between consortia
- Implementation strategy of DMPs into the research workflow, which may include
  - The opportunity of DMP discovery and publication (planning phase, reusability)
  - Seamless integration of DMP tools in research data infrastructures
  - Bidirectional linking between DMPs and other research tools
  - Identification of discipline-specific documentation types

- Identification of interfaces for information exchange between DMP and digital tools for research
- Detection and collection of generic aspects in DMP templates. This may, for example, result in
  - Further content development
  - Guidance for generic aspects from different discipline-specific perspectives
  - Best practices for generic aspects from different discipline-specific use cases
- Coordination and support for further development of RDMO as an example DMP tool
  - Identification of RDMO features
  - Cooperative further conceptual development of the identified features
- Agreement on content and technical standards and exchange formats
- Develop a concept for DMP tool integration in the Research Data Commons (RDC) infrastructure, implement it with RDMO as a testcase

In addition, the following objectives should be considered in case the position is changed by the 3rd round consortia:

- Agreement on common DMP tools (where possible)
- Sharing of DMP tools where appropriate

## Work Plan

### WP1 Evaluating state of the art and collecting needs, activities, and resources

Data management planning plays a role in all participating consortia. Still, there is a need to query all 3rd round consortia and consortium applicants regarding DMP needs and tools to get a complete overview. We will conduct a short survey and evaluate common aims and resources for collaboration.

- 1.1 Collect existing (discipline-specific) templates and funding requirements
- 1.2 Collect, map and merge existing approaches and best practices
- 1.3 Collect and evaluate existing guidance documents
- 1.4 Identify and collect needs of researchers and RDM staff for better DMP support

## WP2 Developing templates (to foster FAIR)

Discipline-specific parts of DMP templates are developed within the NFDI consortia and supported by the RDA WG “Discipline-specific Guidance for DMPs”. The focus of this working group is more on the generic parts, e.g. quality management issues, such as implementing the FAIR data principles. It should be determined which parts in a DMP are generic, i.e. apply to many disciplines. In order to identify reference points and best practice examples, comparison of DMP templates to detect overlaps is useful. It is recommended to use automation especially where generic content has been identified, e.g. basic project details such as project titles, person names, but also which methods and data types are used during the research project. The input can be automated by moving from free text responses to predefined responses. To avoid free text fields, the standard of machine-readable DMPs can be extended. Another important point is the reuse of DMP records for metadata generation for datasets. The aim is also to achieve comparability and comprehensibility of DMPs across different scientific fields.

- 2.1. Develop a template for DMP Guidance focussing on FAIR aspects
  - 2.1.1 Provide disciplinary examples applying the templates (based on NFDI-consortia expertise)
  - 2.1.2 Implement the guidance template in RDMO as proof of concept
- 2.2. Develop a template for FAIR DMP metadata

## WP3 Coordination of DMP tools within NFDI

Many consortia plan to use RDMO. Some consortia cannot cover their needs with it (so far) or use other or even several tools for historical reasons. And for European level projects, there are various DMP tools developed. A need for further information and exchange is required.

We will work closely with the RDMO AG to establish RDMO as an element of the NFDI service portfolio and to support further development, especially with regard to the European integration of RDM. We will create offerings so that all consortia can use RDMO adapted to their specific needs, ranging from consulting and training of the consortia to coordination of the content design of DMP templates to the technical provision of RDMO in different consortia.

- 3.1 Collect requirements for a common NFDI DMP tool
- 3.2 Develop a concept for linking a DMP tool in the Research Data Commons infrastructure
- 3.3 Implement selected requirements / linking aspects in RDMO as proof of concept

## WP4 Integration of DMPs into project and research workflows

Although DMPs support the management of research data, DMP tools are not integrated into researchers' project workflows yet, but an additional component next to project management software, electronic lab notebooks, metadata tools, etc. The working group will pursue the identification of documentation types and interfaces as a prerequisite for the integration of DMP tools. Additionally, the alignment of DMP tools (e.g. RDMO) and the Research Data Commons infrastructure is tackled.

- 4.1 Developing a user support network concept along existing structures
- 4.2 Developing a developer support network concept) for community-driven development

## WP5 Fostering support structures for data management planning

In almost all consortia it is necessary and also intended to support researchers personally in planning their data management via a helpdesk, review service or similar. Such a DMP service requires the individual support of researchers in all disciplines. The DMP service of GFBio is seen as a model here. A two-level support model is conceivable (1. support by local RDM team at home institution, 2. subject-specific support by experts on individual RDM topics from the consortia). Open questions here are how helpdesks scale with increased use and how we bring along institutions that are not affiliated with a consortium.

- 5.1 Develop a communication strategy (i.e. workshops, meetings, crowdsourcing etc.)
- 5.2 Share and discuss concepts with relevant section groups, e.g. cookbooks, guidance, and best practices, or research software engineering
- 5.3 Provide outcomes by publishing them to the community

<b>Milestone</b>	<b>Working package</b>	<b>Description</b>
M.1	WP1	Overview of consortia DMP activities and resources gained
M.2	WP 2	Guidance and best practice examples for generic aspects in DMP templates published
M.3	WP 3	All consortia are able to offer a DMP service (e.g. with RDMO)

M.4	WP 4	Statement on the integration of DMP tools or interfaces for DMP content and metadata into RDC architecture finalised
M.5	WP 5	DMP support model developed

## Collaboration Plan

The working group succeeds the NFDI task force tools subgroup „DMPs in der NFDI“. Collaboration with section “(Meta)data, Terminologies, Provenance” and section “Training & Education” is intended to support the integration of DMP and research workflows.

Members of consortia and of this working group are also leaders or part of national or international groups on data management planning:

- The DINI/nestor-Ag Forschungsdaten UAG DMP is a long existing nation-wide collaboration ([https://www.forschungsdaten.org/index.php/UAG\\_Datenmanagementpl%C3%A4ne](https://www.forschungsdaten.org/index.php/UAG_Datenmanagementpl%C3%A4ne)).
- RDMO-Arbeitsgemeinschaft, considerable personal and institutional overlap to NFDI consortia, particularly in the steering group of the RDMO AG ([https://rdmorganiser.github.io/rdmo\\_arge/](https://rdmorganiser.github.io/rdmo_arge/))
- The RDA working group *Discipline-specific Guidance for Data Management Plans* is co-chaired by Daniela Hausen (NFDI4Chem) (<https://rd-alliance.org/groups/discipline-specific-guidance-data-management-plans-wg>).

## Initial Membership List

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